

# DUAL FREQUENCY ANTENNAS AND ASSOCIATED DOWN-CONVERSION METHOD

## ABSTRACT OF THE DISCLOSURE

A dual frequency antenna includes a plurality of dipole antennas configured to receive first and second frequencies. The antennas are arrayed to an effective length to reradiate at a third frequency, which is down-converted from the first and second  
5 frequencies. A plurality of nonlinear resonant circuits interconnect the plurality of dipole antennas and are configured to permit reradiation of the third frequency over the effective length through its low frequency dipole resonance. A method of down-converting at least first and second electromagnetic radiation frequencies is also provided. The method includes transmitting first and second electromagnetic beams  
10 at first and second frequencies, respectively. The first and second frequencies are converted to the difference frequency through a nonlinear resonant circuit coupling the at least two dipole antennas.

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